

Contributors to This Issue

LEE E. GALLAHER, B.S.E.E., 1951, and M.S.E.E., 1956, Case Institute of Technology; Bell Telephone Laboratories, 1955—. Mr. Gallaher first worked on the design of the flying-spot store for the Morris experimental central office. He later worked on the program stores for No. 1 ESS and is currently concerned with the design of memories and networks for future ESS systems. Member, Sigma Xi, Tau Beta Pi.

JAMES W. GEWARTOWSKI, B.S., 1952, Illinois Institute of Technology; S.M., 1953, Massachusetts Institute of Technology; Ph.D., 1958, Stanford University; Bell Telephone Laboratories, 1957—. Mr. Gewartowski was initially concerned with the development of high-power microwave tubes and electron guns. Since 1962 he has supervised a group concerned with varactor harmonic generators and upconverters and avalanche transit-time diode oscillators. He is co-author of the book, *Principles of Electron Tubes*, (Van Nostrand, 1965). Member, IEEE, Tau Beta Pi, Eta Kappa Nu, Sigma Xi.

A. GOETZBERGER, Ph.D. in Science, 1955, University of Munich; Bell Telephone Laboratories, 1963—. Mr. Goetzberger is a supervisor in the metal insulator semiconductor group. Prior to 1963, he was with the Shockley Laboratory in Palo Alto, where he worked on junction imperfections and avalanche breakdown phenomena in silicon. He also participated in the development of a power transistor. Member, American Physical Society, IEEE, Electrochemical Society.

W. M. HUBBARD, B.S., 1957, Georgia Institute of Technology; M.S., 1958, University of Illinois; Ph.D., 1963, Georgia Institute of Technology; Bell Telephone Laboratories, 1963—. Mr. Hubbard's work has included analyses related to the design of millimeter-wave solid-state repeaters for use in a waveguide transmission system and the construction of prototype high-speed repeaters for this type of system. Member, Sigma Xi, Tau Beta Pi, Phi Kappa Phi, American Physical Society.

BELA JULESZ, Dipl. in Electrical Engineering, 1950, Budapest (Hungary) Technical University, Kandidat in Technical Sciences, 1956, Hungarian Academy of Sciences; Telecommunication Research Institute (Budapest) 1950-56; Bell Telephone Laboratories, 1956—. Mr. Julesz first taught and did research in communication systems and his thesis work reflected his later interest in analyzing and processing pictorial information. At the Laboratories he was first engaged in studies of systems for reducing television bandwidth. Since 1959 he has devoted full time to visual research, particularly in depth perception and pattern recognition, about which he has written extensively. Since 1964 Dr. Julesz is Head of the Sensory and Perceptual Processes Department, responsible for research in visual psychology and neurophysiology. Member, IEEE, AAAS, Psychonomic Society, Optical Society of America.

EDMUND T. KLEMMER, B.S., 1944, Webb Institute of Naval Architecture; M.A., 1949, Ph.D., 1952, Columbia University; Bell Telephone Laboratories, 1962—. Mr. Klemmer has studied customer dialing behavior, subjective evaluation methods, developed a preference scaling method, and measured the subjective quality of satellite circuits. Presently, he is responsible for studies of human performance in using the TOUCH-TONE® telephone for entering data into computer systems. Fellow, American Psychological Association; Member, Human Factors Society, Sigma Xi.

G. D. MANDEVILLE, 1933-34, Monmouth Junior College; 1935-36, Rutgers University; Western Electric Co., 1939-49; Bell Telephone Laboratories, 1949—. With Western Electric, Mr. Mandeville was concerned with radar development and shop test equipment. He headed the shop test equipment prove-in section for three years. With Bell Laboratories he has been associated with guided-wave research in the areas of waveguide and repeaters.

RICHARD H. MINETTI, B.S.E.E., 1966, Newark College of Engineering, evening division; Bell Telephone Laboratories, 1958—. Mr. Minetti has been engaged in development work on microwave tubes and semiconductor devices and is at present concerned with the characterization of avalanche transit time diodes.

E. H. NICOLLIAN, M.E., 1951, Stevens Institute of Technology; M.A. (Physics) 1956, Columbia University; Bell Telephone Laboratories, 1957—. Mr. Nicollian's work has been in semiconductor device physics. He is currently engaged in research on the electrical properties of

semiconductor-insulator interfaces. Member, American Physical Society, Electrochemical Society, RESA, AAAS.

R. M. RYDER, B.S., 1937, Ph.D. (Physics), 1940, Yale University; Bell Telephone Laboratories, 1940—. Mr. Ryder's work since 1948 has been in the area of transistor and other semiconductor device development, including varactor diodes for low-noise receivers, varactors for microwave power generation, high-speed switching diodes, microwave protectors, amplifiers, etc. He is now Department Head in charge of exploratory transistors and integrated circuits. Fellow, IEEE.

IRWIN W. SANDBERG, B.E.E., 1955, M.E.E., 1956, and D.E.E., 1958, Polytechnic Institute of Brooklyn; Bell Telephone Laboratories, 1958—. Mr. Sandberg has been concerned with analysis of military systems, synthesis and analysis of active and time-varying networks, studies of properties of nonlinear systems, and with a few problems in communication theory. His current interests are in the area of numerical analysis. Member, IEEE, SIAM, Eta Kappa Nu, Sigma Xi, Tau Beta Pi.

FRIEDOLF M. SMITS, Dipl. Phys., 1950, Dr. rer. nat., 1950, University of Freiburg, Germany; research associate, Physikalisches Institut, University of Freiburg, 1950-54; Bell Telephone Laboratories, 1954-62; Sandia Corporation, 1962-65; Bell Telephone Laboratories, 1965—. Mr. Smits early work at Bell Telephone Laboratories includes studies of solid-state diffusion in germanium and silicon, and exploratory semiconductor device development. He supervised a group that conducted radiation damage studies on components, particularly solar cells, used in the Telstar satellite. At Sandia Corporation he was responsible for work on radiation effects particularly electron and neutron damage to semiconductors and semiconductor devices. His recent responsibility at Bell Telephone Laboratories is in the field of ultrasonic materials and ultrasonic devices including acousto-optic devices. Senior Member, IEEE; Member, American Physical Society, German Physical Society.

S. M. SZE, B.S., 1957, National Taiwan University, China; M.S., 1960, University of Washington; Ph.D., 1963, Stanford University; Bell Telephone Laboratories, 1963—. Mr. Sze has been concerned with semiconductor device physics and technology. At present, he is concerned with the studies of metal-insulator-semiconductor systems and metal-semiconductor barrier devices. Member, Sigma Xi, IEEE.

